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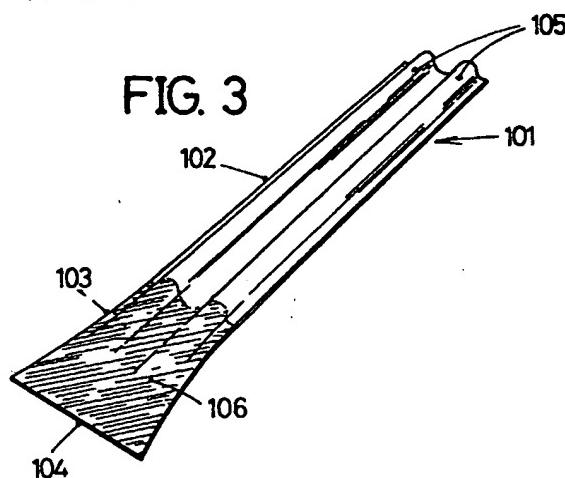
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**(54) DISPOSABLE TOILET SCRAPER AND FABRICATION METHOD**

(57) The scraper is comprised of a single piece elongate laminar body made of water-soluble and biodegradable material, presenting two distinct regions (1, 102; 2, 103), one region is a manual gripping area (1, 102), which is longer, and the other region is a cleaning area (2, 103), which is shorter and wider. There is incorporated in the cleaning area (2, 103) of the scraper a substance (106) which retards its dissolution in the water in comparison with the rest of the scraper. The extremity of the body in the cleaning area (2, 103) may be flattened

like a spade (104); the laminar body may have longitudinal ribs (105) in order to give the scraper some rigidity, or it may be tubular (102a). The method consists in continuously passing a strip between molds and countermolds in order to form the ribs, incorporating the product which retards the dissolution in alternate areas of the strip, flattening the impregnated areas and cutting the strip by half of said areas in order to separate two scrapers.



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## Description

The present invention refers to a disposable toilet scraper and a method for its manufacture; the purpose of this scraper is to allow toilets to be kept clean with the greatest hygiene. Once used, the scraper can be dropped into the toilet itself, since it dissolves in the water thanks to its technical characteristics.

## BACKGROUND OF THE INVENTION

The necessary elimination of remains which adhere to the bowl of the toilet following use thereof is currently carried out by the classic bath scrapers, whose nature and characteristics lack the necessary hygiene and quality requirements. These scrapers have the disadvantage that, once used, they must be carefully washed and rinsed, for they otherwise become a source of unpleasant odours and dirt.

The failure of currently existing toilet scrapers to fulfil the necessary hygiene and quality requirements is due to two fundamental causes, one of which is that the material of which the scraper is made is usually plastic fibre, to which the remains adhere easily, while the other is that such scrapers do not clean the toilet efficiently, so that in some cases the remains are left in the fibres which form the scraper and in other cases in the toilet bowl itself, which clearly means that there is lack of hygiene, a disturbing visual impact, unpleasant odours, foci of infection, etc.

In order to mitigate these disadvantages, toilet brushes have been produced which are formed of a plastic handle to which are coupled disposable elements which are directly intended for the cleaning operation and are made of strips of paper or of sponges.

These brushes nevertheless also have the disadvantage that one part thereof remains non-disposable, and is used repeatedly by different users; this, particularly in the cause of public toilets, can still raise problems of hygiene and rejection by users. Moreover, due to the existence of the non-disposable handle, the cost of these brushes is still relatively high.

There have also been proposals for brushes which are entirely disposable, with a handle of round section and a brush made of strips of paper; however, the round section of the handle, which lends it rigidity, hinders its capacity for rapid elimination in the water of the toilet.

For this reason, some brushes of this type present transversal weakenings in order to break the brush before throwing it away, which partly palliates this disadvantage.

But also in this case, in addition to there persisting the difficulty in elimination due to the thickness of section of the handle, the brushes have the disadvantage of calling for the intervention of the user in the disagreeable operation of handling them in order to break the handle after use. Users often avoid this operation by throwing the brush away whole, which can lead to the brush

remaining for some time in the toilet bowl or causing blockages in drainage pipes.

## DESCRIPTION OF THE INVENTION

The scraper or brush of the invention has been designed to resolve these problems in a fully satisfactory manner, constituting a single-use item or device, that is, a disposable device, made of a material of vegetable or cellulose origin, and having geometrical, weight and density characteristics optimum for efficient fulfilment of the toilet cleaning function while at the same time having a significantly lower cost than the brushes known so far, both in respect of the material and the manufacturing process.

Structurally, the scraper in question comprises a body based on unused and recycled paper pulps, which once treated have optimum weight and density characteristics and presents a slender form which is achieved by use of a die-cutting or moulding process.

The disposable toilet scraper of the invention includes a part for gripping it with the hand and a cleaning part, both of water-soluble material: it is characterized in that it is made up of a single-piece elongated laminar body of rigid structure, which presents two distinct regions, one region being a manual gripping area which is longer, and the other region being a cleaning area which is shorter and wider. The cleaning area is wider than the rest in order to increase the abrasion surface and increase its efficiency.

The elongated laminar construction lends the body good rigidity, while not preventing its easy disintegration when dropped into the toilet bowl, because the thickness to which the water must gain access in order to impregnate all the material is much less than in the case of the known brushes.

The active part of greater width makes it possible to use the scraper easily, quickly and effectively.

The cost of the scraper is lower than that of the known brushes, due both to the quantity of material used and the simplicity of the manufacturing process.

Advantageously, the material of the scraper is biodegradable, so that it does not constitute a source of environmental pollution; preferably, the material is a fibrous material of vegetable or cellulose origin, such as paper or a paper derivative, with absorption and disintegration characteristics which make it optimal for correct operation.

Recycled paper can thus be used in manufacturing the scraper or brush, which makes the cost of the item lower and is also an advantage for the environment.

In accordance with a preferred embodiment of the present invention, the cleaning area of the brush is impregnated with a substance which retards its dissolution in water compared with the rest of the scraper. This prevents the cleaning area from disintegrating too quickly when it comes into contact with humidity, and before it can complete the cleaning operation.

In order to facilitate the work of the scraper, the end of the body corresponding to the cleaning area is flattened like a spade of decreasing thickness towards its front edge.

In one embodiment, the laminar body presents some longitudinal ribs which lend it rigidity in the longer area corresponding to the handle. At one of the ends of the laminar body the ribs are flattened in such a way that the end adopts a spade shape, with thickness decreasing towards the front edge.

Alternatively, the laminar body may be tubular, with the handgrip end open and the cleaning end flattened to form the aforesaid spade shape.

The elongated laminar body may be made up of several strips attached to each other, which strips may be flat in shape, ridged, or a combination of both.

Due to the nature of the material and of its constitution, once used the scraper described is dropped into the toilet and disappears therein, since it is highly porous and will rapidly absorb a sufficient quantity of water to lose its rigidity and thus be able to pass along inside the U-bend and the rest of the pipes, without causing blockages, so that its process of disintegration starts in the toilet itself and is completed in the drain network.

In relation to mass manufacturing of the scraper, the latter has shapes which are easily adapted to existing techniques and physical settings, this due to the very wide dissemination and conditioning factors of use, such as packaging, storage and individual arrangement near the toilet itself.

A process for manufacturing of the brush with longitudinal reinforcement ribs consists in starting with a strip of water-soluble biodegradable material, dragged continuously in a longitudinal advance movement. Throughout its travel the strip passes between sets of moulds and countermoulds which form longitudinal ribs upon the strip. A product is then applied to the strip to retard its dissolution in the water, said product being deposited on short zones, regularly spaced apart by zones of greater length which do not have the product applied to them. The strip then passes through a pressing station which acts regularly and intermittently, flattening only the impregnated zones. Finally, the strip is cut at the end of the flattened zones to provide the brush/scrapers ends.

#### BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the invention some drawings are attached in order to show, solely by way of non-limiting example, a practical case of embodiment.

In said drawings,

Figure 1 shows a front elevation view of the body constituting the disposable scraper or brush object of the invention;

Figure 2 shows a side elevation view of the body of the scraper shown in the previous figure;

Figure 3 is a perspective view of a brush having longitudinal reinforcement ribs;

Figure 4 is a perspective view of a tubular-handle brush; Figure 5 is a perspective view of a flat brush; Figure 6 is a cross-section view of a plurality of piled-up brushes;

Figure 7 is a schematic view in side elevation showing the different phases of a brush manufacturing process; and

Figure 8 is a plan view of various sections of a strip throughout the manufacturing process of the brushes as illustrated in Figure 7.

#### DESCRIPTION OF PREFERRED EMBODIMENTS

As can be seen in the cited figures, the scraper or brush of the invention is made up of a fibrous laminar structure of vegetable or cellulose origin, sufficiently cohesive to lend it strength, with a high air content and, consequently, porous, being manufactured with unused and recycled paper pulps, which once treated confer the optimum weight and density characteristics.

According to the version of the scraper shown in Figures 1 and 2 of the drawings, its shape is elongated and two clearly distinct areas can be distinguished, one called the handle or hand-contact area 1 and the other called the cleaning area 2, such that the hand-contact area is the one intended for gripping by the user, while area 2, by means of its edge 3, will be the area which cleans the toilet; area 2 is wider than area 1, in order to increase its friction surface area and its efficacy, since said area 2, and more specifically the edge 3 thereof, will be the one which contacts the wall of the toilet bowl in order to implement cleaning.

By way of example, the dimensions of the scraper can be 40 mm maximum width in the cleaning area 2 and 2 mm thickness.

As stated previously, the slim or elongated configuration is achieved with a die-cutting or moulding process, while the strength for its optimum functioning is owed to the rigid structure which will offer one or more sheets of either ridged or flat shape.

The scraper thus formed is designed for cleaning toilets once they have been used, without accumulation of unhygienic and bacterial remains inherent to faeces, since once the scraper has been used it is dropped into the toilet itself and disappears along with the water flushed down.

In accordance with another embodiment, the brush object of the invention comprises in Figures 3 to 6 of the drawings a single laminar piece of general reference 101 of water-soluble, biodegradable material, such as thin cardboard, which presents an elongated section 102 in the form of a handle and a shorter flattened spade-like section 103 at one of its ends, with its thickness decreasing towards its front edge 104.

The elongated part which constitutes the scraper has also been designed to be formed of several sheets glued to each other using a water-soluble starch-based adhesive or the like.

The handle 101 presents longitudinal ribs 105 which reinforce it considerably, forming inlets and projections which complement each other, thus facilitating the piling up of the brushes/scrapers (Figures 3 and 6). At one end of the brush these ribs are flattened to form the spade section.

It is also possible for a brush 101a (Figure 4) to present a tubular handle 102a with one end flattened to form the spade section 103a of decreasing thickness towards the edge 104a. The end opposite to the spade section 103 is open in order to facilitate the entry of water and accelerate dissolution of the brush once used.

Figure 5 shows a very simple version of the scraper or brush, formed by a flat strip 101b with a handle 102b, a flattened end 103b and a front edge 104b.

As can be appreciated, the hand-grip area of the scraper of the invention does not require transversal breakage or weakening lines, since its laminar configuration permits its rapid dissolution in the water of the toilet.

This is true even in the embodiment presenting longitudinal ribs, since these do not increase the thickness of the scraper nor prevent the water impregnating it rapidly.

In any of the versions shown in Figures 3, 4 and 5, it is important to stress that the flattened end 103, 103a, 103b is impregnated or coated with a product 106 which retards for a few seconds the dissolution thereof in water, compared with the time which the handle 102, 102a, 102b takes to dissolve. The product 106 may impregnate or coat the spade-shaped end and a short section of the handle immediately adjacent to that end.

As an example of the product which impregnates or coats the spade-shaped end, we might cite a product supplied by the company 3M under the name SCOTCH-BAN.

As can be deduced from all that has been outlined and from observation of the drawings, the brush is very light and yet has sufficient rigidity for use one single time to clean a toilet bowl or other similar body, after which the brush is dropped into the toilet itself in order to dissolve in the water. It is important to point out that in order to avoid premature dissolution of the spade-shaped section during its cleaning work, it has incorporated into it a product 106 which retards said dissolution for a few seconds in relation to the time the handle 102 takes to dissolve.

The scraper or brush can be supplied in packets, perfectly piled together, from which it is taken for use.

The brush/scraper in question eliminates the problem of keeping the currently used scrapers clean. Use of this brush is highly recommendable in the home and, especially, in public places in which it is more difficult to maintain cleanliness and hygiene conditions.

The cost of this brush is very low and perfectly affordable, all the more so if account is taken of the fact that it can have printed upon it advertising motifs, use recommendations and any type of drawing or legend, thanks

to the fact that it can be manufactured from a strip of paper or recycled cardboard.

By way of example, a suitable material for the brush may have a grammage of around 160 g/m<sup>2</sup>.

Below is a description of an example of a manufacturing process for a brush having the characteristics shown in Figure 3.

Manufacturing starts with a strip 107 of a water-soluble biodegradable material, which travels along a path dragged by rollers 108. During its travel the strips passes through pairs of rollers 109, 110 which progressively form ribs 105 in a longitudinal direction. Downstream of this process, the strip 107 passes through a station 111 (a pair of rollers or the like) in which a product 106 is applied to retard its dissolution in water, with the particular feature that the product is applied intermittently on areas 103c spaced apart from each other by longer areas 102. The areas 103c are equivalent to two spade-sections of two corresponding brushes, arranged in opposite directions. The strip then passes through a press 112 (for example, two rollers or the like), which flattens only the areas 1103c to form the spade-sections of the brushes. The strip passes next through a cutting station 113 which cuts it intermittently along the middle of sections 103a to provide the finished brush (Figures 7 and 8).

#### Claims

- 30 1. A disposable toilet scraper, for cleaning the inner wall of a toilet following use, made up of a hand-grip part and a cleaning part, both made of water-soluble material, characterized in that it comprises a single-piece elongated laminar body of rigid structure, which presents two distinct regions (1,102; 2,103), one region being a manual gripping area (1,102) which is longer, and the other region being a cleaning area (2,103) which is shorter and wider.
- 35 2. A toilet scraper as claimed in Claim 1, characterized in that said water-soluble material is biodegradable.
- 3. A toilet scraper as claimed in Claims 1 or 2, characterized in that said material is a fibrous material of vegetable or cellulose origin, such as paper or paper derivatives.
- 4. A toilet scraper as claimed in any of Claims 1 to 3, characterized in that the cleaning area (2,103) incorporates a substance (106) which retards its dissolution in water with respect to the rest of the scraper.
- 5. A toilet scraper as claimed in any of Claims 1 to 4, characterized in that the end of the body corresponding to the cleaning area (2,103) is flattened like a spade having a thickness that decreases towards its front edge (104).

6. A toilet scraper as claimed in Claim 5, characterized in that the laminar body presents longitudinal ribs (105) which lend it rigidity, said ribs (105) being flattened at the end of the piece corresponding to the cleaning area (103), so that the end adopts said form of a spade having a thickness that decreases towards the front edge (104). 5

7. A toilet scraper as claimed in Claim 5, characterized in that the laminar body has a tubular shape (102a), with one end, corresponding to the hand-grip area (102), open, and with the other end, corresponding to the cleaning area (103), flattened to form the aforesaid spade shape having a thickness that decreases towards the front edge (104). 10 15

8. A toilet scraper as claimed in any of the above claims, characterized in that said elongated laminar body is made up of several sheets attached to each other. 20

9. A toilet scraper as claimed in any of the above claims, characterized in that said laminar body is of flat or ridged shape, or a combination of both. 25

10. A manufacturing process for a toilet scraper as claimed in Claims 4 and 6, characterized in that it comprises:

supplying in continuous form a strip of water-soluble biodegradable material, along a path in longitudinal direction;

passing the strip between sets of moulds and countermoulds (108) which form longitudinal ribs (105) upon the strip;

incorporating to the strip (107) a product to retard its dissolution in the water, said product being deposited on short zones (103c), regularly spaced apart by sections (102) of unimpregnated strip of greater length, and equivalent to two spade-sections (103) of two corresponding scrapers, oriented in opposite directions; 30 35 40

flattening the impregnated areas (103c) of the strip in a pressing station (112), which acts regularly and intermittently;

cutting the strip (107) along the middle of the flattened zones, to provide the scrapers. 45

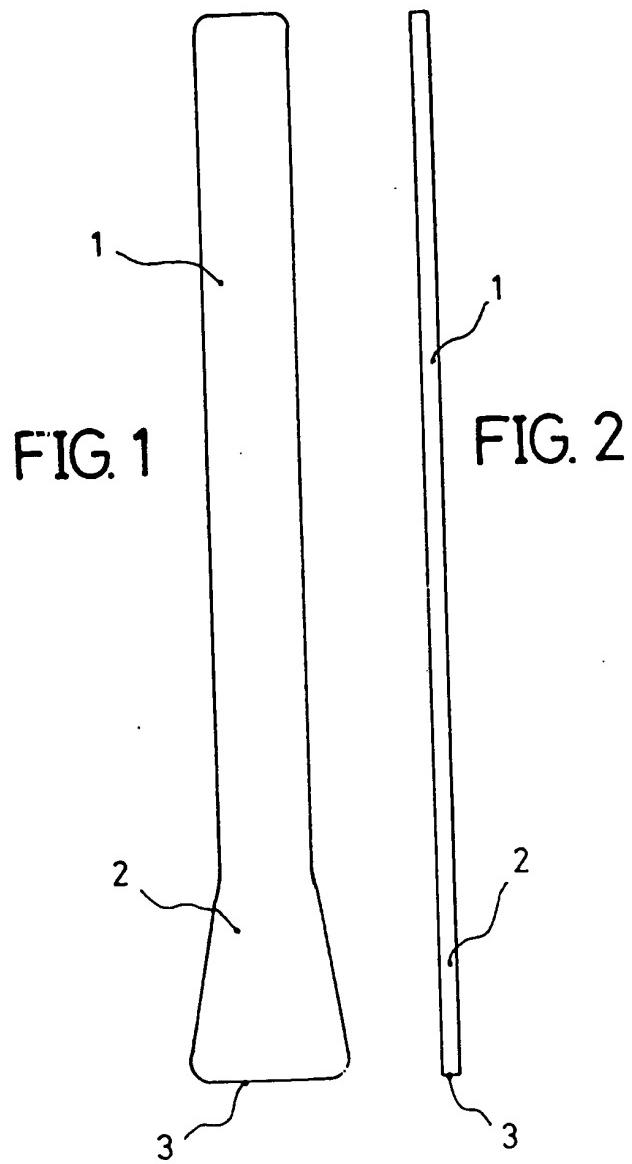


FIG. 3

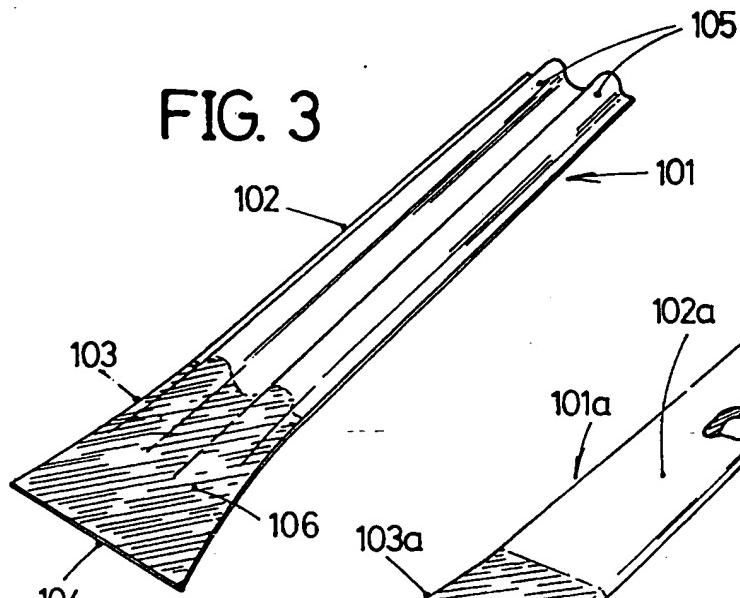


FIG. 4

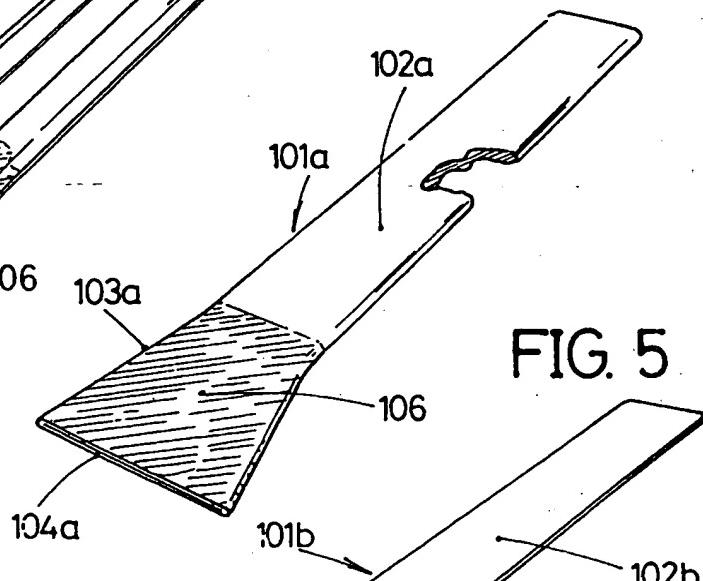


FIG. 5

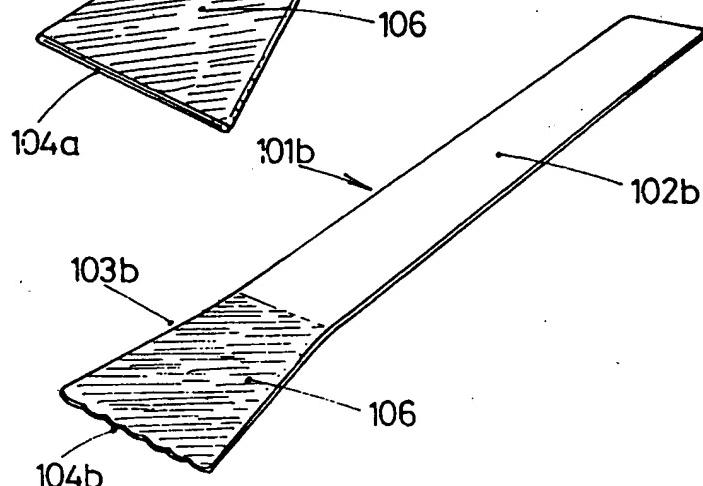


FIG. 6

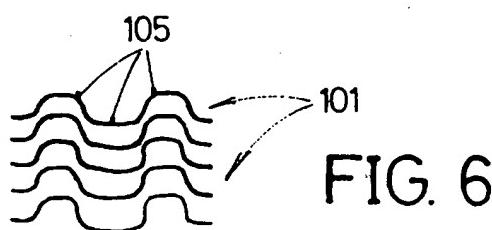


FIG. 7

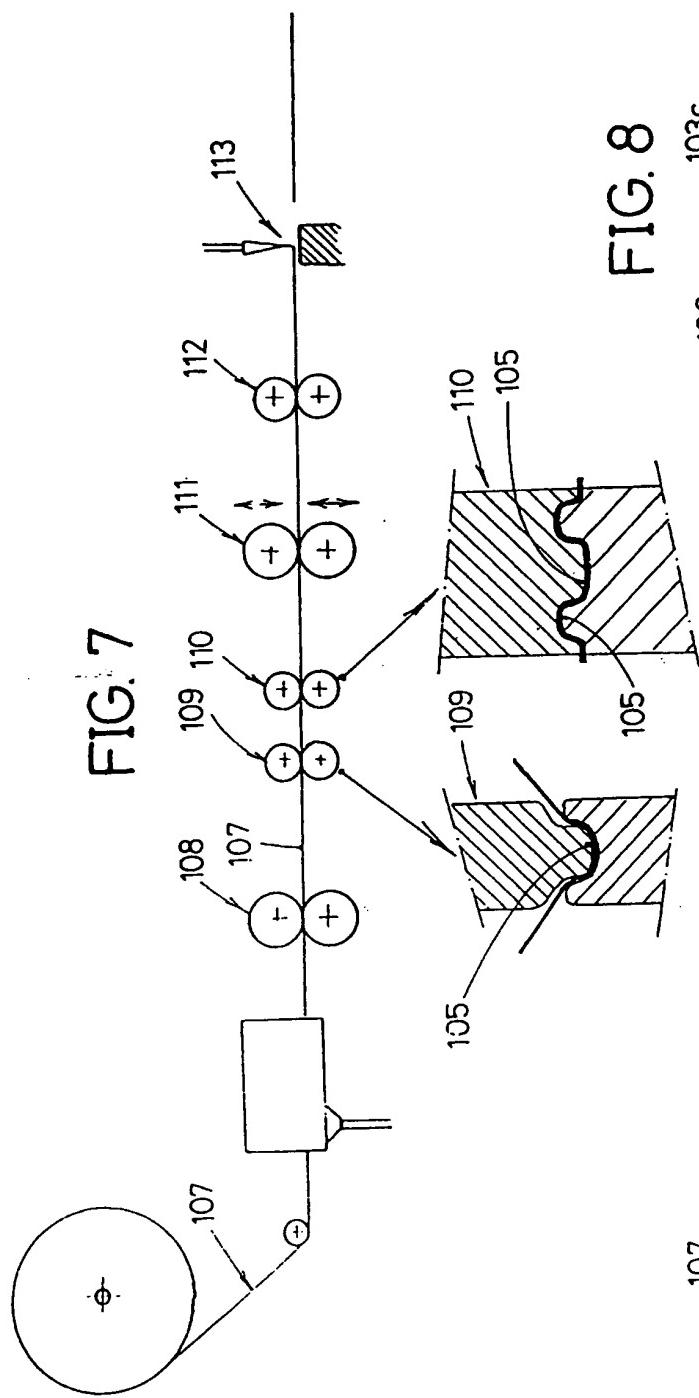
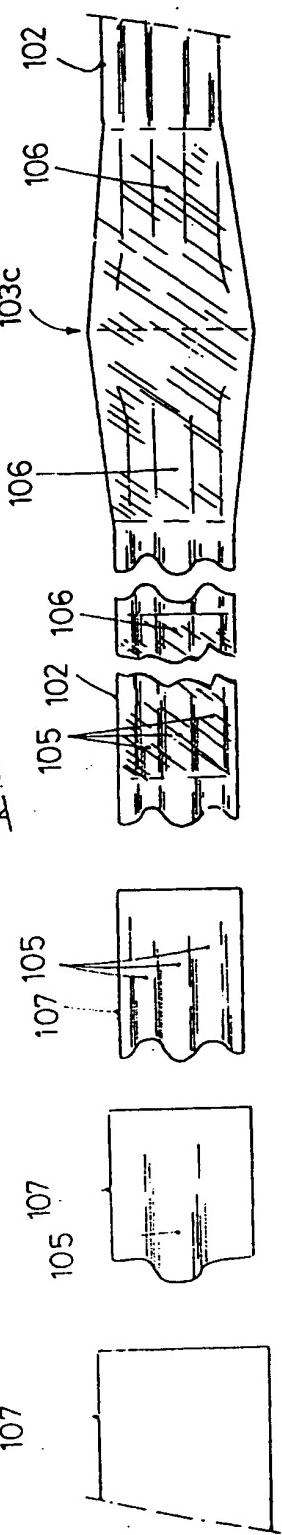


FIG. 8



INTERNATIONAL SEARCH REPORT		International application No. PCT/ES 95/00049
<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int.Cl. <sup>6</sup> : A47K11/10 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)  Int.Cl. <sup>6</sup> : A47K		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP,A, 0 313 495 (ADDUCI & VERGES) 26 April 1989	1-3, 5-9
A	see the whole document	4,10
A	DE,A,39 10 307 (NIEDERMEYR) 4 October 1990 see the whole document	1-5,7
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<input type="checkbox"/> Further documents are listed in the continuation of Box C.		<input checked="" type="checkbox"/> See patent family annex.
<p>* Special categories of cited documents:            "A" document defining the general state of the art which is not considered to be of particular relevance            "E" earlier document but published on or after the international filing date            "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)            "O" document referring to an oral disclosure, use, exhibition or other means            "P" document published prior to the international filing date but later than the priority date claimed</p>		<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention            "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone            "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art            "&amp;" document member of the same patent family</p>
Date of the actual completion of the international search  11 August 1995 (11.08.95)	Date of mailing of the international search report  16 August 1995 (16.08.95)	
Name and mailing address of the ISA/  European Patent Office Facsimile No.	Authorized officer  Telephone No.	

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INTERNATIONAL SEARCH REPORT  
Information on patent family members

Internat'l Application No  
**PCT/ES 95/00049**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-313495	26-04-89	JP-A- 1190325	31-07-89
DE-A-3910307	04-10-90		

Form PCT/ISA/21.8 (Patent family annex) (July 1992)